

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Assignee: Dell Products L.P.

Title: Solution Network Decision Trees

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Examiner: Omar F. Fernández Rivas Group Art Unit: 2129

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Austin, Texas  
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Board of Patent Appeals and Interferences  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL APPEAL BRIEF UNDER 37 CFR § 41.37**

Dear Sir:

Applicant submits this Appeal Brief pursuant to the Notice of Appeal filed in this case on October 17, 2006, the Notice of Panel Decision from Pre-Appeal Brief Review, the Notification dated January 17, 2007 and the Notification dated April 17, 2007. The Appeal Brief was previously paid electronically via the USPTO EFS. The Board is also authorized to deduct any other amounts required for this appeal brief and to credit any amounts overpaid to Deposit Account. No. 502264.

**I. REAL PARTY IN INTEREST - 37 CFR § 41.37(e)(1)(i)**

The real party in interest is the assignee, Dell Products L.P. as named in the caption above and as evidenced by the assignment set forth at Reel 014655, Frame 0563.

## **II. RELATED APPEALS AND INTERFERENCES - 37 CFR § 41.37(c)(1)(ii)**

Based on information and belief, there are no appeals or interferences that could directly affect or be directly affected by or have a bearing on the decision by the Board of Patent Appeals and Interferences in the pending appeal.

## **III. STATUS OF CLAIMS - 37 CFR § 41.37(c)(1)(iii)**

Claims 1, 5-14, 18-27 and 31-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Skaanning et al, U.S. Patent No. 6,535,865 (Skaanning) in view of Weinberg et al., U.S. Patent No. 6,587,969 (Weinberg). The rejection of claims 1, 5-14, 18-27 and 31-39 is appealed. Appendix "A" contains the full set of pending claims.

## **IV. STATUS OF AMENDMENTS - 37 CFR § 41.37(c)(1)(iv)**

No amendments after final have been requested or entered.

## **V. SUMMARY OF CLAIMED SUBJECT MATTER - 37 CFR § 41.37(c)(1)(v)**

The present invention, as set forth by independent claim 1, relates to a method for searching potential solutions within a solution network (see e.g., page 10, lines 1-7). The method includes authoring a solution to solve an issue (see e.g., page 7, lines 10-18), storing the solution within a decision tree relating to the issue (see e.g., page 7, lines 19-21), and searching the solution network based upon the issue (see e.g., page 7, lines 22-28). The searching includes accessing the decision tree relating to the issue (see e.g., page 11, lines 10-26).

The present invention, as set forth by independent claim 14, relates to an apparatus for searching potential solutions within a solution network (see e.g., page 10, lines 1-7). The apparatus includes means for authoring a solution to solve an issue (see e.g., page 7, lines 10-18), means for storing the solution within a decision tree relating to the issue (see e.g., page 7, lines 19-21), and means for searching the solution network based upon the issue (see e.g., page 7, lines 22-28). The searching includes accessing the decision tree relating to the issue (see e.g., page 11, lines 10-26).

The present invention, as set forth by independent claim 27, relates to a system for searching potential solutions within a solution network (see e.g., page 10, lines 1-7). The system includes an authoring module 110, a storing module 112, and a searching module 114. The authoring module enables authoring a solution to solve an issue (see e.g., page 7, lines 10-18). The storing module stores the solution within a decision tree relating to the issue (see e.g., page 7, lines 19-21). The searching module searches the solution network based upon the issue (see e.g., page 7, lines 22-28) and the searching includes accessing the decision tree relating to the issue (see e.g., page 11, lines 10-26).

**VI.  GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL - 37 CFR § 41.37(c)(1)(vi)**

Claims 1, 5-14, 18-27 and 31-39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Skaanning et al, U.S. Patent No. 6,535,865 (Skaanning) in view of Weinberg et al., U.S. Patent No. 6,587,969 (Weinberg). The rejection of claims 1, 5-14, 18-27 and 31-39 is appealed.

**VII.  ARGUMENT - 37 CFR § 41.37(c)(1)(vii)**

**Claims 1, 5-14, 18-27 and 31-39 Are Allowable Over Skaanning et al, U.S. Patent No. 6,535,865 (Skaanning) in view of Weinberg et al., U.S. Patent No. 6,587,969 (Weinberg).**

The present invention generally relates to a search portion of a decision tree module for generating solution knowledge. The search portion renders trees in a format that allows a novice level user to navigate through trouble shooting steps one step at a time while more experienced user has the ability to pick and choose which steps to use. The troubleshooting steps are rendered in a hierarchical view that can be bypassed by skipping steps (i.e., implied success). (See e.g., Application, page 4, lines 15 – 24.)

More specifically, a knowledge management system is provided with a decision tree module for generating solution network knowledge. The decision tree module includes a search portion, a presentation portion and an authoring portion.

The search portion allows both novice and experienced level users to efficiently use the solution network by using implied success. Trees are rendered in a format that allows a novice level user to navigate through trouble shooting steps one step at a time while a more experienced level user has the ability to pick and choose which steps to use. The troubleshooting steps are rendered in a hierarchical view that can be bypassed by skipping steps (i.e., by implied success). The search portion also includes a self learning symptom based search using the customer's perception of an issue. The decision tree links and strengthens or lessens relevancies of trees to customer symptoms (perceptions). Trees are also searchable by viewing a hierarchical view of trees organized based upon business needs. The search portion of the decision tree module also provides a troubleshooting tool; all steps within the decision tree are stand alone knowledge searchable and viewable as individual articles as well as trouble shooting trees.

The presentation portion of the decision tree module presents the results of a search conducted via the search portion of the decision tree module. The presentation portion of the decision tree module provides a user interface via which a searcher access results of a decision tree search

The authoring portion of the decision tree module provides a dynamic tool that reuses content and renders content based on the symptom and requested environmental variables. Environmental variables enable defining search variables across multiple platforms. The tool provides knowledge authors with the ability to link together existing knowledge articles creating troubleshooting trees or creating new articles available for use through searching the knowledge base or in other trees. The authoring portion enables knowledge authors to create content and troubleshoot trees by viewing the content in a process flow. The authoring portion of the decision tree module is web enabled to allow dragging and dropping of content, creating relationships and creating individual knowledge articles. The authoring portion of the decision tree module is dynamic to enable content reviewers to not only review individual pieces of knowledge but also the relationships of knowledge. If a step is changed that is associated with 10 trees, then not only should the step be reviewed, but all 10 trees should also be reviewed to ensure that the content relationship is still valid.

Skaanning relates to automated diagnosis of printer systems via a troubleshooter that uses Bayesian networks. Skaanning sets forth that a Bayesian network is a directed acyclic graph representing the causal relationships between variables that associated conditional probability distributions to variables given their parents. (See e.g., Skaanning, Col. 2, lines 41 – 45.) Skaanning further sets forth that Bayesian networks provide a way to model problem areas using probability theory. (See e.g., Skaanning, Col. 2, lines 60 – 63.) The troubleshooter uses Bayesian networks to model a system component causing failure of a system and includes an indicator node, a plurality of cause nodes and a first plurality of troubleshooting nodes. The indicator node has a state that indicates whether the system component is causing a failure. Each cause node represents a cause of the system component producing a failure. Each troubleshooting node represents a troubleshooting step. Each troubleshooting step suggests an action to remedy causes represented by any cause nodes to which the troubleshooting node is coupled. A causes node represents a probability distribution over causes for failure of the system component. (See e.g., Skaanning, Col. 5, lines 5 – 16.)

The Examiner cites to the following portion of Skaanning for the elements authoring a solution to solve an issue and storing the solution within a decision tree relating to the issue:

The preferred embodiment of the present invention presents a knowledge acquisition (authoring) method for constructing automated troubleshooters in a highly efficient manner, by following a clearly defined process. The knowledge acquisition is commonly recognized as the bottleneck of automated troubleshooters as it is usually cumbersome and very time-consuming. The preferred embodiment of an automated troubleshooter in accordance with a preferred embodiment of the present invention puts constraints on the general Bayesian network modeling phase, and only allows very strict simpler structures—thus limiting the scope and increasing the efficiency of the knowledge acquisition (Skaanning Col. 6, lines 10 - 21).

However, this portion of Skanning, and in fact nowhere in Skanning, is there any disclosure or suggestion of storing the solution within a decision tree relating to the issue as claimed and supported within the present application.

Weinberg relates to user interfaces for testing the functionality of transactional servers. Weinberg discloses a testing tool that automatically records a series of user steps taken during a user session with a transactional server and generates a test for testing the functionality of server. Through a user interface of the testing tool, the user can define verification steps to automatically

test for expected server responses during test execution. The testing tool displays the test to the user as a tree having nodes (displayed as icons) which represent steps of the test. Via the user interface, the user can modify node properties and perform other types of tree edit operations to edit the test. When the user selects a node that corresponds to a particular field or other object of the server screen, the testing tool automatically displays the screen with the object highlighted. The testing tool also allows the test author to use a spreadsheet to conveniently specify data sets for running multiple iterations of a test; thus, the user can record a single transaction and then automatically test the transaction with other data sets.

In response to Applicant's arguments regarding Skanning and Weinberg, specifically with respect to the rendering results of the search in a hierarchical view which enables a user to bypass certain solutions by skipping steps (indicated as [5] by the Examiner), the Examiner set forth:

Regarding [5], the system of Weinberg, presents the test in a hierarchical node structure so that the user can edit the test. The user is able to delete nodes which is considered as skipping a step. Moreover on columns 11, lines 60-65 and column 12, lines 2-15, it states that the user can modify the process to skip a step on the test. (Final Office Action Page 8).

However, nowhere in the cited portions of Weinberg, and in fact nowhere in Weinberg, is there any disclosure or suggestion of storing the solution within a decision tree relating to the issue as claimed and supported within the present application, much less of rendering results of the search in a hierarchical view which enables a user to bypass certain solutions by skipping steps as claimed.

In response to Applicant's arguments regarding Skanning and Weinberg, specifically with respect to the rendering results of the search in a tree format which enables navigating through trouble shooting steps one step at a time and enables a user to pick and choose particular steps to access (indicated as [6] by the Examiner), the Examiner set forth:

Regarding [6], Weinberg discloses on column 5, lines 59-61, that the execution results of the test are presented as a node structure. Moreover, on column 17, lines 1-49 and figure 5F, Weinberg discloses that the user can select a node from the report tree to access a particular step of the test. (Final Office Action Page 9).

However, nowhere in the portion of Weinberg, and in fact nowhere in Weinberg, is there any disclosure or suggestion of storing the solution within a decision tree relating to the issue as claimed and supported within the present application, much less of rendering results of a tree format which enables navigating through trouble shooting steps one step at a time and which enables a user to pick and choose particular steps to access as claimed.

More specifically, Skaanning and Weinberg, taken alone or in combination, do not teach or suggest a method for searching potential solutions within a solution network where the method includes *storing the solution within a decision tree relating to the issue*, searching the solution network based upon the issue where the searching includes accessing the decision tree relating to the issue, and presenting results of a search in a graphical presentation, much less such a method where *the presentation includes rendering results of the search in a hierarchical view which enables a user to bypass certain solutions by skipping steps, and rendering results of the search in a tree format which enables navigating through trouble shooting steps one step at a time and enables a user to pick and choose particular steps to access*, all as required by claim 1. Accordingly, claim 1 is allowable over Skaanning and Weinberg. Claims 5 - 13 depend from claim 1 and are allowable for at least this reason.

Skaanning and Weinberg, taken alone or in combination, do not teach or suggest an apparatus for searching potential solutions within a solution network where the apparatus includes *means for storing the solution within a decision tree relating to the issue*, means for searching the solution network based upon the issue where the search includes accessing the decision tree relating to the issue, and means for presenting results of a search in a graphical presentation, much less such an apparatus where the means for presenting includes *means for rendering results of the search in a hierarchical view which enables a user to bypass certain solutions by skipping steps, and means for rendering results of the search in a tree format which enables a user to navigate through trouble shooting steps one step at a time and enables a user to pick and choose particular steps to access*, all as required by claim 14. Accordingly, claim 14 is allowable over Skaanning and Weinberg. Claims 18 - 26 depend from claim 14 and are allowable for at least this reason.

Skaanning and Weinberg, taken alone or in combination, do not teach or suggest a system for searching potential solutions within a solution network where the system includes an authoring module, a storing module, a searching module and a presenting module where *the storing module stores the solution within a decision tree relating to the issue* and the searching module searches the solution network based upon the issue and *the searching includes accessing the decision tree relating to the issue* much less such a system where the presenting module includes a first and a second rendering module where *the first rendering module renders results of the search in a hierarchical view which enables a user to bypass certain solutions by skipping steps and the second rendering module renders results of the search in a tree format which enables a user to navigate through trouble shooting steps one step at a time and enables a user to pick and choose particular steps to access*, all as required by claim 27. Accordingly, claim 27 is allowable over Skaanning and Weinberg. Claims 31 - 39 depend from claim 27 and are allowable for at least this reason.

**VIII. CLAIMS APPENDIX - 37 CFR § 41.37(c)(1)(viii)**

A copy of the pending claims involved in the appeal is attached as Appendix A.

**IX. EVIDENCE APPENDIX - 37 CFR § 41.37(c)(1)(ix)**

None

**X. RELATED PROCEEDINGS APPENDIX - 37 CFR § 41.37(c)(1)(x)**

There are no related proceedings.

**XI. CONCLUSION**

For the reasons set forth above, Applicant respectfully submits that the rejection of pending Claims 1, 5-14, 18-27 and 31-39 is unfounded, and requests that the rejection of claims 1, 5-14, 18-27 and 31-39 be reversed.

I hereby certify that this correspondence is being electronically submitted to the COMMISSIONER FOR PATENTS via EFS on

Respectfully submitted,

May 10, 2007.

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**CLAIMS APPENDIX "A" - 37 CFR § 41.37(c)(1)(viii)**

1. A method for searching potential solutions within a solution network comprising:  
authoring a solution to solve an issue;  
storing the solution within a decision tree relating to the issue;  
searching the solution network based upon the issue, the searching including accessing  
the decision tree relating to the issue; and,  
presenting results of a search in a graphical presentation, the presenting including  
rendering results of the search in a hierarchical view, the hierarchical view  
enabling a user to bypass certain solutions by skipping steps; and,  
rendering results of the search in a tree format, the tree format enabling navigating  
through trouble shooting steps one step at a time, the tree format enabling  
a user to pick and choose particular steps to access.
  
5. The method of claim 1 further comprising:  
the searching includes a self learning symptom based search using a perception of an  
issue by the customer.
  
6. The method of claim 5 wherein:  
the decision tree links and strengthens or lessens relevancies of trees to customer  
symptoms.
  
7. The method of claim 1 wherein:  
the searching includes enabling trees to be searchable by viewing a hierarchical view of  
trees organized based upon business needs.
  
8. The method of claim 1 wherein:  
the storing the solution within a decision tree provides a dynamic tool that reuses content  
and renders content based on the symptom and requested environmental variables.

9. The method of claim 1 wherein:

the storing the solution within a decision tree includes linking together existing knowledge articles to generate troubleshooting trees.

10. The method of claim 1 wherein:

the authoring the solution includes creating new articles available for use through searching the knowledge base in other decision trees.

11. The method of claim 1 wherein:

the authoring the solution includes creating content and troubleshooting trees by viewing an issue in a process flow.

12. The method of claim 1 wherein:

the authoring the solution includes dragging and dropping of content to create relationships and create individual knowledge articles.

13. The method of claim 1 wherein:

the authoring the solution is dynamic to enable content reviewers to review relationships between individual pieces of knowledge.

14. An apparatus for searching potential solutions within a solution network comprising:

means for authoring a solution to solve an issue;

means for storing the solution within a decision tree relating to the issue;

means for searching the solution network based upon the issue, the searching including accessing the decision tree relating to the issue; and,

means for presenting results of a search in a graphical presentation, the means for presenting including

means for rendering results of the search in a hierarchical view, the hierarchical view enabling a user to bypass certain solutions by skipping steps; and,

means for rendering results of the search in a tree format, the tree format enabling navigating through trouble shooting steps one step at a time, the tree format enabling a user to pick and choose particular steps to access.

18. The apparatus of claim 14 further comprising:  
the means for searching includes means for performing a self learning symptom based search using a perception of an issue by the customer.

19. The apparatus of claim 18 wherein:  
the decision tree links and strengthens or lessens relevancies of trees to customer symptoms.

20. The apparatus of claim 14 wherein:  
the means for searching includes means for enabling trees to be searchable by viewing a hierarchical view of trees organized based upon business needs.

21. The apparatus of claim 14 wherein:  
the means for storing the solution within a decision tree provides a dynamic tool that reuses content and renders content based on the symptom and requested environmental variables.

22. The apparatus of claim 14 wherein:  
the means for storing the solution within a decision tree includes means for linking together existing knowledge articles to generate troubleshooting trees.

23. The apparatus of claim 14 wherein:  
the means for authoring the solution includes means for creating new articles available for use through searching the knowledge base in other decision trees.

24. The apparatus of claim 14 wherein:  
the means for authoring the solution includes means for creating content and  
troubleshooting trees by viewing an issue in a process flow.
25. The apparatus of claim 14 wherein:  
the means for authoring the solution includes dragging and dropping of content to create  
relationships and create individual knowledge articles.
26. The apparatus of claim 14 wherein:  
the means for authoring the solution is dynamic to enable content reviewers to review  
relationships between individual pieces of knowledge.
27. A system for searching potential solutions within a solution network comprising:  
an authoring module, the authoring module enabling authoring a solution to solve an  
issue;  
a storing module, the storing module storing the solution within a decision tree relating to  
the issue;  
a searching module, the searching module searching the solution network based upon the  
issue, the searching including accessing the decision tree relating to the issue; and,  
a presenting module, the presenting module presenting results of a search in a graphical  
presentation, the presenting module including  
a first rendering module, the first rendering module rendering results of the search  
in a hierarchical view, the hierarchical view enabling a user to bypass  
certain solutions by skipping steps; and,  
a second rendering module, the second rendering module rendering results of the  
search in a tree format, the tree format enabling navigating through trouble  
shooting steps one step at a time, the tree format enabling a user to pick  
and choose particular steps to access.

31. The system of claim 27 further comprising:  
the searching module performs a self learning symptom based search using a perception  
of an issue by the customer.
32. The system of claim 29 wherein:  
the decision tree links and strengthens or lessens relevancies of trees to customer  
symptoms.
33. The system of claim 27 wherein:  
the searching module enables trees to be searchable by viewing a hierarchical view of  
trees organized based upon business needs.
34. The system of claim 27 wherein:  
the storing module stores includes a dynamic tool that reuses content and renders content  
based on the symptom and requested environmental variables.
35. The system of claim 27 wherein:  
the storing module links together existing knowledge articles to generate troubleshooting  
trees.
36. The system of claim 27 wherein:  
the authoring module creates new articles available for use through searching the  
knowledge base in other decision trees.
37. The system of claim 27 wherein:  
the authoring module creates content and troubleshooting trees by viewing an issue in a  
process flow.
38. The system of claim 27 wherein:  
the authoring module enables dragging and dropping of content to create relationships  
and create individual knowledge articles.

39. The system of claim 27 wherein:  
the authoring module is dynamic to enable content reviewers to review relationships  
between individual pieces of knowledge.

**EVIDENCE APPENDIX - 37 CFR § 41.37(e)(1)(ix)**

None

**RELATED PROCEEDINGS APPENDIX - 37 CFR § 41.37(c)(1)(x)**

There are no related proceedings.